

PROJECT CHARGE: 1703  
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FLAVORS ADSORPTION STUDIES (A. Robinson, V. P. Henderson)

Contact angle, surface tension test methods and the concepts of critical surface tension have been used to determine the adsorption behavior characteristics of Bright Casing, Burley Casing, Burley Top and Marlboro AC on tobaccos. The investigation was initiated in support of the "Flavorants Spotting Study".

Preliminary results show that the conventional Bright Casing and Marlboro Aftercut do not readily spread onto Oriental tobacco surfaces (i.e., they bead). This observation is consistent with predictions from critical surface tension data.

This investigation will continue with other tobaccos. In addition, the experiments will be expanded to include the measurements as a function of temperature. From the temperature results we hope to gain insight about optimum casings and flavorants application temperatures.

TOBACCO ADHESIVE STUDIES (T. E. Majewski)

Ten percent of calcium acetate based on the weight of sucrose present in an aqueous solution forms a material with desirable adhesive properties. The lower limit of the amount of calcium acetate needed to form an adhesive material from sucrose and be foam stable with licorice is being determined. Additionally, the correct temperature to which the mixture should be heated to prepare the sucrose/calcium acetate mixture is also being studied.

POLYPROPYLENE FILTERS ADHESIVE STUDIES (T. E. Majewski, A. Robinson, V. P. Henderson)

Work continues in characterizing the adhesives used on the polypropylene filter tow. The initial critical surface tension ( $\gamma_c$ ) and surface tension ( $\gamma_{LV}$ ) results suggested that the tow material and the adhesive were compatible (i.e., had a good surface match). However, our more recent results indicate the materials are too compatible. There is a large disparity between the tow  $\gamma_c$  value of 82 dynes/cm and the adhesive  $\gamma_{LV}$  value of 31 dynes/cm. Ideally, for best adhesion  $\gamma_{LV} \leq \gamma_c$ , but when there is such a large difference with  $\gamma_{LV}$  being on the lower side, the liquid is expected to be completely absorbed by the substrate. This behavior was observed experimentally.

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